



CHNEP Citizen's Advisory Committee Meeting Minutes
Wednesday, August 25th, 2021
10:00 am – 2:00 pm
Zoom Virtual Meeting

Draft Citizen's Advisory Committee Meeting Minutes

Members Present via Zoom:

Aaron Zimmerman	Sarasota
Bridget Washburn	Glades
Danika Fornear	Glades
Debi Osborne	Manatee
Ernesto Lasso de la Vega	Lee (alternate)
Harry Phillips	Lee
Kayton Nedza	Hardee
Lynn Shelfer	DeSoto
Nicole Johnson	Lee
Pete Quasius	Hendry
Richard Larsen	Charlotte
Robert Winter	Charlotte
Tom Palmer	Polk

Others Present:

Jennifer Hecker	CHNEP
Nicole Iadevaia	CHNEP
Andrew Webb	CHNEP
Sarina Weiss	CHNEP
Sophia Brown	CHNEP
Jane Collingwood	Lemon Bay Conservancy – Lemon Bay Watch
Janet Bowman	The Nature Conservancy
Rod Braun	The Nature Conservancy
Laura Geselbracht	The Nature Conservancy
Joseph Schmidt	The Nature Conservancy

Agenda Item #1 – Call to Order and Introductions — Harry Phillips, Co-Chair

Chairman Harry Phillips called the meeting to order at 10:01 am. Introductions were then made.

Agenda Item #2 – Agenda Additions or Deletions — Harry Phillips, Co-Chair

No additions or deletions were made to the agenda.

PETE QUASIAS MOVED, SECONDED BY KAYTON NEDZA TO APPROVE THE AGENDA ITEMS AS PRESENTED. THE MOTION WAS CARRIED UNANIMOUSLY WITH NO FURTHER DISCUSSION.

Agenda Item #3 – Public Comments on Agenda Items — Harry Phillips, Co-Chair

No public comments on agenda items were made.

Agenda Item #4 – Citizens Advisory Committee (CAC) April 28th, 2021 Meeting Minutes
— Harry Phillips, Co-Chair

No edits were suggested for the Citizens Advisory Committee (CAC) April 28th, 2021 Meeting Minutes.

BRIDGET WASHBURN MOVED, SECONDED BY DEBI OSBORNE TO APPROVE THE CITIZENS ADVISORY COMMITTEE (CAC) APRIL 28TH, 2021 MEETING MINUTES. THE MOTION WAS CARRIED UNANIMOUSLY WITH NO FURTHER DISCUSSION.

Agenda Item #5 – CHNEP Update — Jennifer Hecker, Executive Director

CHNEP's Executive Director, Ms. Jennifer Hecker, presented on programmatic activity occurring since the last Citizen's Advisory Committee meeting. Highlights are as follows:

Financial support continues to be a priority. CHNEP staff prepared customized 2021 invoice letters to all 10 counties and 25 cities in the CHNEP area. These packets included the FY21 invoice, CHNEP CCMP Summary, 2021 Legislative Priorities, and project fact sheets. Since the last cycle, CHNEP has received all budgeted FY21 annual contributions. The 2022 Invoice letters and budget will be sent out at the beginning of FY22 in October 2021. Additionally, CHNEP received \$787.00 in private donations and have received three (3) grant applications, completed four (4) grant process reports, submitted one (1) grant application, received two (2) project proposals, and wrote one (1) letters of support for partnership grants.

CHNEP program administration highlights include a finalized formal Interlocal Agreement with the University of Florida to work with UF's Center for Coastal Solutions in the CHNEP program area, as well as formally joining Growing Climate Solutions to build climate awareness in Southwest Florida. The CHNEP also hired Research Specialist, Sarina Weiss, and Public Outreach Specialist, Sophia Brown.

Additionally, the CHNEP has been working on other finance and administrative items which include:

- Working with the South Florida Water Management District to receive funding for additional tasks for the South Lee County Watershed Initiative as well as to request recurrent annual funding for the South Lee County and Lower Charlotte Harbor Flatwoods Initiatives
- Amended FY21 and FY21 budgets which were approved by Policy Committee
- Submitted EPA FY22 grant funding application
- Submitted FY22 budget narratives and performance measures to the City of Punta Gorda
- Worked with Charlotte County staff for the passage of a resolution to support CHNEP request to SFWMD for recurrent dedicated funding support to implement hydrological restorations
- Submitted letters to the SFWMD to define the TBD projects that are outlined in the FY19 & FY21 agreements
- Began work on the leveraging portion of NEPORT for projects that have occurred in the CHNEP area

CHNEP hosted the 2021 Southwest Florida Climate Summit and co-hosted the Florida Macroalgae 3-Day Workshop, as well as participated in several partnership meetings to provide Citizen's Advisory Committee 8/25/2021 Meeting Minutes

comments and technical support. These include the Barrier Island Parks Society Red Tide Forum, Estero Bay Agency for Bay Management Meeting, FDEP Blue Green Algae Task Force Meeting, Florida NEP/CZMP Coordination, GOMA Workshop: Climate Change Adaptation, GOMA: Building Partnerships for a Healthier Gulf, Gulf of Mexico Ecosystem Service Logic Models and Socio-Economic Indicators (GEMS), Myakka River Management Coordinating Council Meeting, Science and Environment Council Meeting, SOCAN (Coastal Acidification Network) Group Meeting, 2020 Charlotte Harbor & Lemon Bay Seagrass Map Results Meeting with SWFWMD, Charlotte Co. & Sea Grant (3), Southwest Florida Seagrass Working Group Meeting, South Florida Ecosystem Restoration Task Force Working Group Meeting, Chaired the Southwest Florida Water Management District Environmental Advisory Committee Meeting, Congressman Greg Steube and staff, Congressman Scott Franklin's staff, and Senator Marco Rubio's staff, Charlotte County Water Quality Manager, and the SWFWMD Executive Director.

CHNEP staff presented on a variety of topics for the Macroalgae Workshop, the Greater Everglades Ecosystem Restoration Science Conference (GEER), the U.S. EPA 2021 NEP Workshop, the 2021 Southwest Florida Climate Summit, the Florida Snook Symposium, the Environmental Discussion Group of Manatee County, the Charlotte County Board of County Commission, and the Lower Charlotte Harbor Flatwoods Initiative Working Group. These partner meetings and presentations have garnered media which include:

- An interview on seagrass and nutrients with local news station WINK News
- CHNEP media featured in PBS Special
- 6/14 Charlotte Harbor seagrass lost 3 decades of recovery in 2 years - WINK
- 5/21 Taking a holistic approach to water quality - Port Charlotte Sun
- 5/21 'We are ground zero': How sea level rise could impact SWFL roads - NBC2
- 4/21 We Preview the 2021 Southwest Florida Climate Summit - WGPU
- 4/21 County cleans up fill kill at Port Charlotte Beach Park - NBC2
- 4/21 2021 Southwest Florida Climate Summit announced - Caloosa Belle
- 4/21 Piney Point wastewater may fuel harmful algae bloom along Florida coast, experts say - USA Today

In regards to public outreach, CHNEP has co-authored a scientific journal article "Developing a Water Quality Assessment Framework for Southwest Florida Tidal Creeks" which was published in the July 2021 Estuaries and Coasts. CHNEP customized CHNEP Update videos that were sent to all State Senators in the CHNEP area, staff reached out to CHNEP Congressional offices including Congressmen Steube and Buchanan who signed onto the Congressional NEP Appropriations sign-on letter. Additionally, postcards were mailed to update the Constant Contact database. CHNEP also attended external outreach events including the Frostproof Earth Day Festival in Polk County and the Wauchula Wildcat Tailgate in Hardee County. CHNEP has 637 total volunteers, 106 new Facebook followers, 6,314 subscribers to educational mailings, and had 2,431 unique visitors to the CHNEP website.

Moreover, CHNEP has been hosting monthly volunteer events including the Earth Day Trash Cleanup in April with Keep Charlotte Beautiful, a Florida Native Plantings seminar with the Charlotte Harbor Environmental Center and Florida Master Gardeners, a citizen science training for the 'Eyes on Seagrass' program with Florida SeaGrant, and a FL Horseshoe Crab Watch

Training with FWC. Following the Earth Echo Water Challenge virtual presentation hosted by the CHNEP in March, participants received water testing kits for World Water Day to contribute to a global effort in water monitoring reporting. Other notable outreach accomplishments were the release of the Harbor Happenings Spring/Summer 2021 issue, planned and hosted the 2021 Southwest Florida Climate Summit, created Seagrass Fact Sheets with 2020 data, conducted the 2022 Nature Calendar Photo Contest and held a special CAC Calendar Photo Evaluation Meeting, made regular Facebook posts on variety of events including CHNEP volunteer events, World Ocean's Day and National Pollinator Week. Ms. Hecker concluded by thanking the committee members and the CHNEP staff.

Committee member Harry Phillips commented that he appreciates receiving several copies of the Harbor Happenings magazine which are very popular.

Agenda Item #6 – New Conservation Grant Applications — Andrew Webb, Finance & Grants Specialist

Andrew Webb, CHNEP Finance and Grant Specialist, provided an overview of new conservation grant applications that were received for FY2022. The Conservation Grants program supports the public engagement pillar of the CHNEP Comprehensive Conservation and Management Plan (CCMP) by increasing the proportion off the population that supports and participates in actions to protect and restore estuaries and watersheds. They began in 2001 as Public Outreach Grants and Microgrants. This program is designed to stimulate grassroots community natural resource protection and restoration, as well as non-profit partnerships. Preference is given to underserved communities or new applicants and projects in the CHNEP area.

Mr. Webb shared an overview of three new applications that have been received for the Summer cycle with an October 1st award date. The next Conservation Grant cycle deadline is December 1st with a February 2022 award notice. Highlights are as follows:

Project one is “Equipment for Detecting HAB Toxins in Air and Water.” The funding requested by the applicant is for supplies to build 2 algal toxin collectors to increase the level of testing of aerosolized toxins caused by HABs. The applicant is requesting \$1,423.68 of funding from CHNEP with the total project cost being \$2,708.36. CHNEP staff recommends funding \$1,238 of the project which is for the supplies to build the 2 algal toxin collectors.

The second application is “Charlotte Harbor Environmental Center Digital Audio Guided Hikes.” The funding request by the applicant is to develop a digital guided hike on the trails at CHEC with the project aiming to build 200 signs that have QR codes at different stops. The applicant is requesting \$3,000 of funding from CHNEP with a total project cost of \$7,433.50. CHNEP staff recommends funding \$998 of the project to install 20 signs as well as the subscription fee for the digital QR code information on all signs installed on the site.

The last application is “New Home Buyers Water Quality Video Guide.” This project is to develop a 9-12 minute educational film to introduce new homebuyers to the multiple clean water issues in Florida and providing best practice tips on mitigating harm. The applicant is requesting \$2,940 of funding from CHNEP with a total project cost of \$5,540. CHNEP staff recommend to

fully fund the project contingent on review and approval of the final video and content before it is widely distributed.

Committee members commented that these are good applications and that there is a lot of research coming out about blue green algae and they are glad to see these projects to address those issues are being funded. Committee members also commented that the homeowners guide to water quality sounds fantastic and a lot of people do not understand what comes off the landscape very much influences water quality and their health. Committee members asked how the video for the last application would be distributed and who the applicant was. Mr. Webb explained that the applicant is Glade Runner LLC and the video would be distributed through home owner associations and new communities, as well as on the internet. Ms. Hecker added that KC Schulberg from the Calusa Waterkeeper is the applicant that applied through his organization, Glade Runner LLC. Additionally, the video will also probably be distributed by the Calusa Waterkeeper and through their networks. The video will be given to the CHNEP as a project deliverable then placed on the CHNEP website and Water Atlas for members of the public and partner organizations to access. Ms. Hecker mentioned that the content will be reviewed to ensure it meets the grant guidelines. Lastly, a committee member commented that by having this tool public on the website, they can provide links to it on city and county websites to reach new resident clubs and real estate groups. This is important information to contribute to the public to ensure they understand water quality in Florida and how they can be part of the solution.

Agenda Item #7 – Enhancing Coastal Resilience through Nature-based Risk Reduction: Examining a Mangrove Insurance Option — Laura Geselbracht, The Nature Conservancy

Ms. Laura Geselbracht, The Nature Conservancy (TNC), presented information about how The Nature Conservancy is exploring the potential use of mangrove insurance to enhance coastal resilience in Florida, Mexico, and the Caribbean. Highlights are as follows:

The Nature Conservancy’s mission is to conserve the lands and waters on which all life depends. TNC is the largest conservation non-profit in the world and work across the U.S. and 79 countries. They are science and relation based. Their climate change goals are to limit global warming to well below 1.5°C and to strengthen resilience to climate change impacts. TNC is coordinating with a number of Florida’s Climate & Resilience Collaboratives to unify positions on policy, greenhouse gas emissions inventories, vulnerability assessments, and climate indicators. In Florida, TNC is working to increase coastal resilience and promote climate adaptation by restoring natural infrastructure and implementing demonstration projects with nature-based solutions (NbS). Nature-based solutions can be using natural systems or a combination of natural systems with hardened infrastructure. Natural systems protect and provide numerous benefits for coastal communities. Healthy coastal ecosystems such as coral reef, mangrove forest, saltwater marsh, and beaches and dunes help to reduce wave height associated with tropical storms as well as reduce inland flooding in extent as well as depth. Mangroves decrease the storm surge level behind them which reduces inland flooding, but increase the storm surge level in front.

TNC has quantified the benefits of natural infrastructure in the case of storm surge. In Florida, coral reefs provide \$675 million in flood protection benefits every year. Mangroves protect the global economy from over \$65 billion in damage in each year. Additionally, a post-Hurricane

Sandy study found that salt marshes in Hurricane Sandy reduced losses by up to 30% in some areas.

Additionally, TNC worked on a project with the University of California Santa Cruz to assess the benefits that mangrove forests provided during Hurricane Irma. The modelled storm surge during Hurricane Irma with and without mangrove forest concluded that mangroves in Florida protected approximately 625,000 people and prevented \$1.5 billion in direct flood losses or damages. Mangroves risk reduction benefits were estimated by measuring flooding and property losses during Hurricane Irma for two scenarios: with mangroves present in their current extents, and with all mangroves lost to open water (theoretically possible due to higher sea levels and peat loss).

TNC's nature-based solutions projects in Florida include the Resilient Island Project with Palm Beach County, the Morningside Park Project with the City of Miami, and the Brittany Bay Park Project with the City of Miami Beach. The Resilient Island Project not only brings coastal ecosystems into the Lake Worth Lagoon area, but it also protects some of the onshore development from storm surge by the presence of an island in front of developed areas. The Morningside Park Project involves a highly-used park that was previously inaccessible during the Fall season due to high tides and flooding. TNC has been working on the design phase for the Morningside Park Project, which entails creating mangrove habitat on the shoreline, changing the elevations, native plantings, as well as improving drainage. The Brittany Bay Park Project is similar and will involve a lot of native plantings on the shoreline, changing the elevations, and improving utility of the park. These projects are funded by private foundations as well as the TNC.

TNC previously worked on insuring coral reefs in Cancún, Mexico with the State of Quintana Roo and the Mexican Government. This policy went into effect on June 1st, 2019, and was renewed in 2020. The way this program works is by tourism tax dollars going into a trust fund, which not only develops an insurance product to protect the reefs and beaches, but some is used for ongoing reef and beach restoration. The insurance product is a parametric insurance that does not depend on conducting a damage assessment, but is based on conditions laid out previously. In this particular coral reef project, the storm had to be within a certain proximity and a wind speed to trigger an insurance payout then coral reef brigades can repair the damage. In 2019, there were not any storms in the vicinity. However, in October 2020, Hurricane Delta was close enough and had high enough wind speeds to trigger the first coral reef insurance did payout. Coral reef insurance paid out at the 40% level because the wind was reported at 100 knots. The payout happened relatively quickly after the storm, and the reef brigades were deployed right. Repair and restoration work was conducted during the first 10 days, which stabilized 1,200 coral colonies as well as collected and reattached 8,000 broken coral pieces to the reef. This allowed tourists to continue enjoying the beaches, the coral reef, and the livelihoods of the local communities.

Currently, TNC is collaborating with AXA, Cinvestav, and the University of California Santa Cruz on a Mangrove Insurance Feasibility Project. The purpose of this project is to assess where and how mangroves can be restored and/or used to supplement existing habitats to stabilize shorelines, reduce natural hazard impacts, as well as to assess where and how a mangrove

insurance product can be designed for identified locations. This project started in October 2020 and is expected to be completed in March 2022. The project focuses on Florida, Mexico, and the Bahamas. They are looking for areas that this type of product would make sense and have been reaching out to organizations, municipalities, state agencies, counties, and even private interest. Outputs include the assessment of underlying data required for mangrove insurance product design, engaging key stakeholders in areas with high mangrove protection values, and to conduct initial site identification for the launch of mangrove insurance product.

This project involves looking at 3 different pathways for developing mangrove insurance, including fragility curves, increased granularity, and market analysis. Fragility curves were developed using past hurricane data and modeling to look at the vulnerability of different coastlines to hurricane damages and flooding. TNC previously conducted a global study on mangrove-avoided damages, which is being downscaled to the Florida and Caribbean area for the increased granularity pathway. The third pathway involves improving the market analysis which includes gathering data from the Florida property appraiser. For the modelling impacts, the project team started by looking at historical storm tracks and strengths to develop an offshore wave climate using the SWAN model. This model looks at storm return periods of 5, 10, 25, 50, and 100 years. Maps were produced to show coastal flooding with and without mangrove protection. TNC's Florida team has contributed data acquisition (property appraiser data and mangrove restoration costs), partner development, results visualization, providing information on local conditions, and local promotion to this project. Preliminary results include a Florida Mangroves Avoided Damages Benefit-to-Cost Ratio map, which showed a positive benefit-to-cost ratio of 2:1. Lastly, mangrove protection isn't static. Factors affecting mangroves include: climate change, such as sea level rise, precipitation and temperature changes; human-related impacts, such as hydrological changes, deforestation, and coastal development; and tropical storms and hurricanes/cyclones, which affect our mangroves through wind damage, storm surge, over sedimentation, and rainfall.

Committee members thanked Ms. Geselbracht for the presentation and noted that the maps of flooding with and without mangroves make for a very compelling case. Additionally, Cape Coral is about a mile from Matlacha Pass where mangrove forests make up about half of the area and that probably protects the city from some storm surge. The committee member also noted that the National Flood Insurance Policy has a program called the Community Rating System where municipalities, counties, and communities do their best to mitigate the impacts of flooding which mostly include infrastructure but some include restoration projects. Those projects equal savings on flood insurance which might influence a community to not develop a piece of land and instead protect it for flood protection.

Another committee member commented that in Collier and Miami-Dade counties, the Army Corps of Engineers have a lot of infrastructure projects to protect from storm surge and most are seawalls, but they have not been looking at the benefits of natural solutions. The committee member asked if The Nature Conservancy has been working with or speaking to those counties about the Mangrove Insurance Feasibility project. Ms. Geselbracht responded that that is a great suggestion and that type of project is being promoted in the Miami-Dade area. There has been some push back to the Army Corps to look at nature-based solutions, but there may be a need to do a combination of green and gray infrastructure. Rod Braun, TNC Climate Program, followed

up by saying they met with a Commissioner and deputy administrator from Collier County to discuss the project and the Army Corps survey was mentioned. There was interest in mangrove protection, especially in areas that are outside of the Army Corps project boundary. The feasibility study will be really telling to show where to invest after storm events.

Another committee member commented that they would like to talk later to see how Growing Climate Solutions could collaborate with TNC and showcase TNC's projects. Ms. Hecker asked if they had any inland examples on how this project would work. Ms. Geselbracht explained that other natural systems are being looked at like salt marshes. Rod Braun followed up that they have not looked specifically inland, but that this could be applied to a variety of natural systems. Ms. Geselbracht commented that after the flooding in Tennessee, other communities have been looking at natural systems to protect people and property from flooding. Ms. Hecker responded that many people in Florida believe they will be more protected inland, but during Hurricane Irma some of the worst flooding was inland. Additionally, climate change is not only going to affect coastal communities, but also inland communities and we need to direct resources to assist with efforts there. Ms. Hecker asked if Ms. Geselbracht could elaborate more on the insurance instrument. Ms. Geselbracht explained that the insurance instrument is funded by tourism dollars that go into a trust fund. The trust fund is used for some ongoing restoration and some is used to pay the insurance premium. Due to the insurance being parametric, when the insurance is invoked it does not require an assessment of damages. Rod Braun elaborated that the insurance is paid out on a trigger and can be paid out in less than 10 days to immediately go back into the system. Additionally, the hotel association pays into the trust fund as well as the state, Quintana Roo, which matches the fund. It has been so successful that the program is expanding to other Central American countries as well as Asian-Pacific countries.

A committee member asked if there had been any studies on sand dunes in coastal areas. Ms. Geselbracht explained that they have not done any studies far as she knows, but it is a good idea considering the storm surge protection sand dunes provide when vegetated. Ms. Hecker asked if TNC has talked with the tourist industry people to see if there is any buy in on their part in supporting a concept considering the model could support their revenue streams. Ms. Geselbracht responded that they had those talks early on to identify a funding source for the insurance product. Rod Braun followed up that they conducted a feasibility study and discussed with many stakeholders that had interest, but one of the issues was the state of the coral reefs with disease and a lot of focus was to be put into that problem. They would be happy to work with local tourism and development councils to gauge interest in these projects. Ms. Geselbracht commented that there are more benefits natural systems provide including carbon sequestration and wildlife habitat.

Ms. Hecker stated that since we have members that are involved across the region in this meeting and asked what the CAC members should be on the lookout for to assist the TNC's efforts. Rod Braun responded that they are looking for cost data regarding mangrove restoration or post storm events. Additionally, they would like to come back and present the final results of the study and find a pilot location for this project to get proof of concept. Ms. Hecker responded that Sanibel and Naples could be areas for a pilot location and the CAC members could help with reaching out to specific communities. Ms. Geselbracht followed up by saying the development of an insurance product like this one is a three way discussion between the insurance company, the

buyer, and the TNC. Additionally, any cost data on mangrove restoration in Florida would be helpful. Ms. Hecker responded that the Conservancy of Southwest Florida has been very involved on that topic. Nicole Johnson followed up by saying she will reach out to their science division and see if there is any data they can provide to TNC. Ms. Iadevaia commented that Robinson Preserve in Manatee County may have had mangrove restoration. Mr. Braun responded they are researching that one now.

Agenda Item #8 – 2021 Red Tide Event in Upper Charlotte Harbor Discussion – Sarina Weiss, Research Specialist

Sarina Weiss, CHNEP Research Specialist briefed committee members on the results of analyses conducted by CHNEP and Charlotte County to look at wind, actual flow and residence time, and the previous and current Minimum Flows and Levels for the Tidal Peace river in relation to the unusual red tide event that occurred in the Lower Peace River and in upper Charlotte Harbor. Highlights are as follows:

Ms. Weiss introduced an animation by Brandon Moody who used FWC's Red Tide data to plot a timeseries (December 2020 – May 2021) with the average weekly wind direction (reported at one of Charlotte County's weather stations in Port Charlotte) and document red tide cell counts. The timeseries illustrated Red Tide increasing and gradually moving up into the Harbor as the directional winds were north to northeast. The end of the dry season, wind patterns, general circulation dynamics of the Harbor, and stressors potentially induced by macroalgae outbreaks combined to create the perfect storm for a bloom to occur in the northern part of the Harbor.

Red Tide is caused by a marine organism called *Karenia brevis*. It is unlikely to occur at salinity less than 18.5 psu in Charlotte Harbor as it becomes too fresh for *K. brevis* cells. In the Upper Charlotte Harbor and Tidal Peace River area, the I-75 bridge is the approximate boundary of 18.5 psu being in the natural salinity envelope, therefore waters upstream of the I-75 bridge should be too fresh for *K. brevis* cells. To explore the severe Red Tide bloom in upper Charlotte Harbor, Ms. Weiss used NOAA's Harmful Algal Bloom Observing System of recorded counts of red tide occurrences and abundance levels in the upper Charlotte Harbor and tidal Peace River from December 2020 to May 2021. The data illustrated the Red Tide bloom in that area primarily occurred in April and May 2021. The 2017-18 Red Tide started in late October 2017 and last to May 2018. During that time, there were some days where Red Tide was found in mostly low or very low abundances in the upper Harbor and tidal rivers. Compared to this past year, there have been more counts of *K. brevis*, more frequent counts, and it has been found in higher abundances.

Ms. Weiss explained that this analysis was to consider if water quantity and flow could be a contributing factor to Red Tide occurring the upper Harbor and River. If an area is not getting enough natural range of flow, the salinity envelope could be outside of its normal conditions. This can be caused by severe drought or the need for hydrological restoration in the system. To associate counts of Red Tide with flow rate from tidal Peace River the number of counts was multiplied by 100. U.S. Geological Survey daily flow rate data for the three Lower Peace River gage sites was used to plot Lower Peace River flow rates with the Red Tide occurrences, which illustrated that that majority of the Red Tide occurrence coincided with flow rate drops below 200 cubic feet per second (cfs). The next steps are to continue the analysis to look at salinity and

rainfall to see if salinities and flows were within natural ranges. The objective of hydrological restoration modelling and planning, like the Charlotte Harbor Flatwoods Initiative, is imperative to restore more natural flows and levels that would prevent saltwater and Red Tide intrusion.

Committee members commented that this is very interesting that the flow level could potentially impact where Red Tide can go. Committee members asked how much of the Red Tide bloom due to the wind direction. Ms. Weiss explained that the difference was not quantified, but the analysis will expand to look at those factors as well as salinity and rainfall data to get a broader picture. Ms. Hecker elaborated that it would be very difficult to break variables apart since it was probably due to a combination of factors. The main point shown here was that *K. brevis* is a marine organism that needs certain salinity levels and if those salinity levels are high enough in freshwater areas, it creates conditions where the cells can survive. It could be that wind pushed *K. brevis* into the Harbor and salinities were conducive to allow a bloom to persist, whereas if it was pushed into a freshwater area and salinities were low then it would not survive. This might be a matter of multiple factors and even ones we have not explored, but we are trying to get a full picture of all of those factors and see what can be controlled. The committee member suggested contacting Captain Ralph Allen from Kingfisher Cruises who has worked in that area since the '70s and can only remember 3 to 4 times when Red Tide has gotten that far back. Part of the bloom could be attributed to a large amount of rainfall received in the previous year.

Additionally, a committee member asked what might be useful to look in terms of restoration projects that would make a difference in water level and flow during times when the flow gets too low. Another committee member asked if the water being released from Lake Hancock was included in the analysis. Ms. Hecker responded that there is a lot of hydrological alteration in all the watersheds in Southwest Florida and some have lost their base flow due to the loss of wetlands around them which can make a system flashier like higher highs and lower lows. In other areas there have been artificial things like the C-43 reservoir to take flow off during high time and pulse it back during low times. Additionally, there have been more natural system approaches to see where more wetland and tidal creek flow restoration can be done like the Charlotte Harbor Flatwoods Initiative. The committee member commented that looking at areas where there are protection opportunities; there may be a case to argue for additional wetland restoration to manage flow along the Peace River. Ms. Hecker responded that they are trying to connect the dots and get people to understand the different variables in addition to water quality, like flow and salinity levels, that are needed in order to get water quality right and hopefully reduce the frequency, severity and duration of Red Tide. The committee member responded that it is important that people further in the watershed understand that what happens upstream has an impact on red tide everywhere. Ms. Hecker agreed and stated a holistic watershed approach is necessary to address Red Tide. Additionally, Ms. Weiss responded that Lake Hancock discharges were not included in this analysis. Ms. Hecker explained that those discharges were not taken into consideration because there are water supply withdrawals upriver. A committee member commented that Lake Hancock does go through a treatment marsh, but the discharges are intended to preserve minimum flows and levels which can be tricky. Ms. Hecker responded that the filter marsh has shown to be very effective at reducing nutrients before the water continues downstream.

Agenda Item #9 – Roundtable Discussion Environmental Outreach — Harry Phillips, Co-Chair

Harry Phillips, CAC Co-Chair, lead the roundtable discussion on environmental outreach with a focus on Harmful Algae Blooms. Harry Phillips stated that in Cape Coral, they partnered the Health Department, FAU, and FGCU to conduct air and water quality samples on the canals with the help of the Canal Watch volunteers. They study is aimed to get benchmark information about HAB presence in air and will be ongoing every summer. Mr. Phillips presented the following questions to CAC members to start the discussion:

1. What are main concerns with Harmful Algae Blooms? What are possible solutions?
2. What are the best ways to get education information to the general public? What should the messaging be on the link between nutrient pollution and harmful algae blooms?
3. What is the CAC role in getting information out to the community and making connections between red tide and nutrient pollution?

Debi Osborne commented that she works not only in Manatee County, but also throughout the coastal watershed. Most of Manatee County that is being affected by Red Tide is in the Sarasota Bay or Tampa Bay Estuary Programs. SBEP, TBEP, and the Suncoast Waterkeeper hosted a symposium about research they have done and the impact of the Piney Point Spill.

Ernesto Lasso de la Vega, Lee County Hyacinth Control District and Pond Watch Program, commented that a lot of the issues he sees with smaller communities in regards to HABs is not so much fertilizer usage due to ordinances, but the use of reclaimed water. The wastewater treatment facilities have to treat their water before it is discharged, but some strategies include discharging it as reclaimed water. The reclaimed water is treated at the Secondary or Tertiary levels that minimizes bacteria and is then sold for irrigation in golf course. The reclaimed water is not treated enough and is loaded with nutrients. After speaking with Water Treatment Managers, the plants would be updated to Advanced Treatment in 5 years which is too long to wait. Ms. Hecker responded that this is a really important point which is why identifying advanced wastewater treatment is a key item in our CCMP with the objective of moving all to advanced wastewater treatment facilities. There are water conservation benefits to using reclaimed water, but if reclaimed water is used too close to surface waters those nutrients can enter those waterbodies. Reclaimed water is generated year-round, but it is not used year-round which poses the issue of what to do with it when it is not needed. That water is typically routed to storm water ponds that do not have water quality standards, but those ponds can influence waterbodies that do have water quality standards. It can become very difficult to trace the reclaimed water influence on surface waters which makes it important to carefully and thoughtfully use reclaimed water.

Harry Phillips commented that the City of Cape Coral has one of the largest reuse water systems and the demand is so high that they actually take water from the City of Fort Myers. This reclaimed water is being discharged onto Cape Coral lawns, but not everyone follows the rules in regards to its use. Having reclaimed water is great because potable water is not being used for irrigation, but it is a huge responsibility knowing how the water could impact local water quality. It has been a struggle to convey this information to people and codes regarding reclaimed water use are difficult to enforce.

Tom Palmer brought up that on one hand red tide is occurring, but studies go back to the 40's that show nutrient inputs from rivers make blooms worse. It could be worthwhile to reinforce that nutrient inputs influence red tide because some people just write it off as natural. It is natural, but some things make it worse and there are things that can be done to lessen it.

Richard Larsen commented that his community already knows about the effect of nutrient pollution on red tide, but they would like to know what can be done by individuals to help. Ms. Hecker responded that there are concrete things citizens can do to reduce nutrient pollution, but nutrient sourcing is usually done at the federal level when a Total Maximum Daily Load Limit is developed for an impaired waterbody. This has been an issue that our TAC has weighed in on and we are lacking information that pinpoints the source of nutrients. Ernesto Lasso de la Vega explained that everyone who drives a car contributes to CO₂ levels, but large energy plants release more than every individual person – this is comparable to nutrients. People can do small things, but upgrading Wastewater Treatment Plants has a much larger impact. Ms. Hecker mentioned that the last Policy Meeting theme had this same topic of addressing wastewater with presentations on Reducing Septic tank Pollution, how Advanced Wastewater Treatment led to the recovery of Tampa Bay, and the use of reclaimed water for irrigation in an urban watershed.

Debi Osborne mentioned that this leads to the topic of discussion, what can people do? You don't want them to stop using reclaimed water, but you want them to use it correctly. She mentioned that citizens may not be able to advocate for improved Wastewater Treatment levels in their communities. Richard Larsen responded that if the citizens do not know that these problems exist, how they can say they want these problems fixed. Kayton Nedza responded that citizens may not want to pay increased taxes for clean water, but this begins with educating the public about how much of the problem comes from wastewater. Debi Osborne responded that in Manatee County, citizens voted to tax themselves for land acquisitions that could improve water quality by keeping the nutrients on the land. People need to understand the bigger source of nutrients and what they can do about it which is advocate for improved wastewater. Harry Phillips agreed that there is a huge disconnect, but having the connection between restoring coastal ecosystems like seagrass then you have defenses from nutrients to get offshore. This all plays into education the public about nutrients and its sources. Additionally, Kayton Nedza brought up the idea of sending reclaimed water to inland communities that would reduce irrigation and fertilizer use. Ms. Hecker responded that the most expensive part of reclaimed water is the pipes and that would be challenging. There is also the possibility of treating the reclaimed water to a higher level before distributing it. Tom Palmer commented that it is difficult to get people to understand they do not need to irrigate as much as they do.

Moreover, Debi Osborne commented that at the last CAC meeting there was a presentation about the extreme loss of seagrass which is an opportunity to educate people about the connection of red tide and marine life. Harry Phillips agreed that they are all connected and it is an important point. Ms. Osborne asked if there is additional information about salinity and the impact on the upper reaches of the watershed in regards to the CHNEP fact sheets. Ms. Hecker responded that red tide and new seagrass fact sheets are available on the CHNEP website. It is difficult to explain to people about all the different factors that impact these systems. People want one answer, but there are so many factors impacting these systems. Harry Phillips responded that sometimes it is not as simple as creating a fact sheet. All these environmental disasters are

showing that we are at a tipping point which is what we need to convey to people. Kayton Nedza mentioned that there are so many people moving to Florida which is having an impact. Ms. Hecker followed up by stating there are natural ways to deal with resiliency and there are nature based solutions in regards to red tide is a challenge. People understand red tide is a problem and there are a variety of natural and artificial solutions, but how can we get the public to support a nature based solution. Harry Phillips commented that if you are restoring natural systems, the benefits go beyond the problem at hand and those benefits are key to conveying to the public. Mr. Phillips followed up by mentioning how you convey the problem to new people. Ms. Hecker responded that there is a shifting baseline in what normal is, new people think red tide is normal. We could show people it is possible to get back to what Florida used to look like and have something like the Caribbean in the future. Mr. Phillips responded that that is a good idea and could drive people to act now.

Richard Larsen commented that Tampa Bay could be used as an example for what could be done to change an environment. Pete Quasius responded that it can be done to show that you can do it once, but if infrastructure does not keep up with population growth then it can be lost. Kayton Nedza mentioned that the CHNEP was created as a NEP when the waterbody was in pristine condition whereas most other NEPs were created because they were degraded. Debi Osborne followed up by stating the Indian River Lagoon shows it is very hard to recover from that level of decline. Ms. Hecker added that we are close to a tipping point and people typically do not react until we have passed the tipping point which is too late. According to Dr. Joane Burkeholder, when the system has transitioned from a seagrass dominated system to a macroalgae dominated, it is very unlikely to return to it. The whole system is fundamentally changed and makes it nearly impossible to return to a seagrass dominated system. Debi Osborne agreed and stated that it is a real challenge to appropriately convey the crisis to people so that people become engaged. Ms. Iadevaia responded that that is a really important point. Nicole Johnson stated that the LOSOM is being modelled and optimized by the Corps. The alternative as it currently exists is worse than existing conditions and west coast input is very important. Ms. Hecker responded that the CHNEP Policy Committee made a resolution for the LOSOM that calls for a more balanced approach and can be found on the CHNEP website.

Agenda Item #10 – Calendar Photo Contest — Sophia Brown, Public Outreach Specialist

Sophia Brown, CHNEP Public Outreach Specialist, provided an overview of the Calendar photo selections voted on during the August 11th special CAC Photo Selection Meeting. The CHNEP Calendar is a longstanding tradition and key way we reach new and returning audiences. The content is curated, designed, and distributed through a collaborative effort by the CAC, staff, and contributing community members. It features environmental education content and information about the CHNEP. This year, over 190 photographs were submitted. With the help of the CAC submissions were narrowed down by looking at content, quality, and location, then sorted into possible features or thumbnails for the 2022 Calendar.

Agenda Item #11 – Technical Projects Update — Nicole Iadevaia, Research & Outreach Manager

CHNEP's Research and Outreach Manager, Nicole Iadevaia, presented on updates to technical projects that are already underway, in-progress, or have been completed since the last cycle. Highlights are as follows:

The CHNEP will mostly likely receive funding for a new project titled "Knowledge Co-Production for Place-Based Recreational Fishery Conservation in Charlotte Harbor, Florida." This project involves identifying challenges to sport fish nursery habitat persistence, developing realistic management strategies to protect those areas, and design restorations for fish habitat. This project will be launched in October.

The Gateway to Myakka Park Marsh Restoration project site was acquired by the Conservation Foundation of the Gulf Coast. The site includes 3 acres of floodplain marsh and one mile of riverfront, identified as an important piece of the Myakka River Corridor. Native planting work was completed to coincide with the rainy season and plant lists were adjusted based on conditions. The project will be completed by the end of September 2021 and will be followed by presentations to CHNEP committees in December.

The Warm Mineral Springs Restoration is a design project to restore hydrology and improve habitat for the Federally threatened Florida manatee by restoring access to warm water refugia, stabilizing areas of eroding shoreline, and removing invasive plant species. Design plans have been completed and approved by CHNEP and FWC, and final permits were issued in May 2021. The project has been completed and FWC will seek funding for project implementation.

The Charlotte Harbor Flatwoods Hydrological Restoration is a modeling project to create integrated surface/groundwater models for hydrological restoration of the Charlotte Harbor Flatwoods area. The goals of this project include sheet flow enhancement, natural flow enhancement, water quality improvement, groundwater recharge, and flooding reduction. There is a lot of water backing up at the Yucca Pens. Updates to the Charlotte Harbor Flatwoods Hydrological Restoration Modeling Project include:

- Installed 39 monitoring stations: Completed 2020
- Ecologic field work: Completed 2020 and 2021 – looked at high water levels on trees
- Flow Rating: Complete by end of 2021 wet season
- Quarterly (1-6) Data Download
 - 1st August 2020
 - 2nd November, 2020
 - 3rd Feb 2021
 - 4th May 2021
 - 5th August, 2021
 - 6th November 2021
- Model Existing Conditions: December 2021
- Model Future Scenarios: March 2022
- Draft Report by April 2022, Final Report by July 2022

The South Lee County Watershed Initiative Hydrological Restoration is a modeling project to create integrated surface/groundwater models for hydrological restoration of the South Lee County Watershed. This project aims to restore more natural water flows, improve water quality and environmental conditions, increase natural water storage and moderation of flooding events. Current Conditions Modeling has been completed and adjustments to the model are being made based on data from field verification and ecological indicators observed for water depth. Tasks 9-13 scenario analysis, the final report, and LiDAR-based DEM correction will be completed by November 2021. Task 10 Model Future Scenarios is underway and is to be completed by the end of the year. The SLCWI came up with 3 Future Scenarios, highlights are as follows:

Underlying assumptions implemented in SLCWI Future Scenarios

- Climate Change impacts based on NOAA modeling of Intermediate/High Sea Level Rise with low accretion rate
- Future projected water uses as outlined in the SFWMD's Water Supply Plan
- Airport mitigation lands assigned to existing conserved
- Projects in permitting assigned to developed lands (based on land use outlined in permitting)
- Implementation of High Priority projects from Lee County's Stormwater Master Plan as currently envisioned by Lee County that are also in the model domain boundary

SLCWI Future Scenarios

- 1) Full Habitat & Hydrology Restoration Maximized with Limited Addition Development Scenario – all Preservation/Conservation Opportunities are assumed to be fully preserved with full hydrological restoration.
- 2) Development Maximized with Limited Added Habitat & Hydrological Restoration Scenario – all remaining developable land assumed to build out to the maximum allowable limits. Limited additional hydrological restoration.
- 3) Added Habitat & Hydrological Restoration and Added Development Hybrid Scenario – hybrid of Scenario 1 & 2 (both ends of the range) to encompass the entire spectrum of possibilities.

Additionally, the Water Quality Benefits of Submerged Aquatic Vegetation (SAV) project is almost completed. This project was done in partnership with FGCU to assess the nutrient removal capacity of tape grass in the Caloosahatchee River. Mesocosm and field experiments were conducted. The research showed that nutrient addition had a strong effect in the mesocosms, but water column nutrients and Chl *a* levels were lower on average in treatments with tape grass. Less epiphytic algae was noted when tape grass was present. Conclusions overall, showed increasing tape grass coverage and density in combination with reducing nutrient loading will create the best results for improving water quality. FGCU will continue with this study with different nutrients.

Lastly, Ms. Iadevaia gave an overview of new seagrass monitoring data by the Southwest Florida Water Management District as well as on the ground monitoring data. Seagrass is recognized as a bio indicator of water quality and is used to track the health of estuaries. Lemon Bay lost about 12% of acreage in the last 2 years throughout the entire bay. Lemon Bay started lost 11% of seagrass acreage in 2016-2018 especially in the upper portion. Red tide, Hurricane Irma, and

macroalgae blooms all contributed to this seagrass loss. In Charlotte Harbor, there was a loss of 50% on the North East Wall. Overall there was a 23% loss throughout the entire Harbor. On the ground data confirms a decrease in seagrass and shows an increase in macroalgae abundance. Priorities for moving forward include putting together all existing data to gather a system-wide perspective, establishing macroalgae monitoring programs and water quality targets to measure seagrass and macroalgae, support for watershed monitoring to investigate nutrient sources and concentration, as well as new work to better understand the connections between nutrients, seagrass, and water quality.

A committee member commented that the Snook Foundation received additional funding to expand plantings in the Caloosahatchee and will be doing a few pilots using innovative technologies. Another committee member stated fact sheets about how a blade of seagrass improves your day of boating. Ms. Hecker mentioned that the seagrass fact sheets with the new data is available on the CHNEP website.

Agenda Item #12 – CAC Member Updates — Harry Phillips, Co-Chair

Each member present provide an update and are as follows:

- Harry Phillips, Lee County, updated that they put in oyster monitoring stations in Caloosahatchee River at the Cape Coral Bridge and at two locations two miles downstream. This monitoring aims to record data on oyster spat recruitment as well as to get information about flow and salinity. They are hoping to make this a long term project to get data on how releases or no releases impact oyster recruitment in river.
- Kayton Nedza, Hardee County, updated that school has started and he plans to bring some students to the CHNEP Coastal Cleanup in September.
- Robert Winter, Charlotte County, updated that the Peace River Audubon will have Eva Farner from Lemon Creek Wildflower Preserve give a presentation on the development of the preserve into a first class estuary. The preserve was an abandoned golf course and the project received funding from CHNEP, NOAA, and SWFWMD. Additionally, he is making a series of trail videos for the preserve that can be accessed through a QR code on signs located at interest points. Moreover, the Rotunda West Association has an abandoned golf course with 12 ponds and they have been sampling water quality to see how to make it more environmentally friendly. They have added an aeration fountain, littoral plants, and terrestrial plants to one pond. The largest pond there has the worst water quality and the association is trying to get B-Mats to improve the water quality. Lastly, they invited Dr. Michael Parsons from FGCU to advise them on what they can do to improve the area.
- Debi Osborne, Manatee County, updated that the Conservation Foundation is acquiring 228 acres of land in the Myakka River Watershed for the county. Additionally, they have a series of YouTube videos where Lee Amos, Land Steward, talks about land stewardship and restoration at Pine Island, Upper Myakka, and the Tatum Sawgrass Preserve.
- Tom Palmer, Polk County, updated that they have completed the Lake Gwyn project in Winter Haven that rehydrated the lake and restored habitat. This will hopefully reduce nutrient pollution going into the Peace River. The Lake Conine project is building a new filter marsh and the last pipe going to the pond has been redirected. Additionally, Panther Point Trail around Lake Hancock has reopened and has provided a lot of wildlife viewing. Crooked Lake Wisp Property will be open to the public soon. Lastly, the Polk

Regional Water Cooperative is looking at a site near the Peace River and Bow Legs Creek in Fort Meade as a future reservoir site.

- Aaron Zimmerman, Sarasota County, updated that they will be attending the 2nd Annual Alligator Creek Festival aimed at educating the community about nutrient reduction and sustainability. Additionally, they have installed a Water Goat, a floating pollution strategy, in Alligator Creek and two near the Ringling College of Arts.

Agenda Item #13 – General Public Comment — Harry Phillips, Co-Chair

Members of the public were given 3 minutes each to make any comments and are as follows:

Jane Collingwood with the Lemon Bay Watch will be at the Water Fest in November in Englewood with plastic projects for kids. Her organization is very interested in seagrass especially at the Wildflower Preserve. In November, they will be interacting with neighbors that are impacted by the work they do in Englewood and will ask them to report any algae or bad boating habits around Lemon Creek and Stump Pass. They have been concerned with the boating habits and jet skis around Stump Pass

Agenda Item #14 – Future Meeting's Topics, Location and Date — Harry Phillips, Co-Chair

The next meeting dates for 2021 and 2022 are 12/15/21, 4/27/22, 8/24/22, and 12/14/22.

Agenda Item #15 – Adjourn — Harry Phillips, Co-Chair

Meeting was adjourned at 2:02 pm.